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EXAMINER

VEZERIS, JAMES A

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3693

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/781,871	Applicant(s) BONISSONE ET AL.	
	Examiner JAMES A. VEZERIS	Art Unit 4172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/11/2008, 11/23/2004, 1/16/2008, 1/22/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Claim Objections

1. Claim 34 is objected to because of the following informalities: In claim 34 it is stated, “a fourth portion, and after executing...” this is confusing and unclear terminology. Appropriate correction is required.

Claim Rejections- 35 U.S.C. 112 2nd Paragraph

2. Claims 1, 9, 10, 12, 16, 26, 31, 32, 34, and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what the local tradeoffs are. Examiner will examine the case as if the tradeoffs are based on anything that can adjust risk and return.

3. Claims 9, 10, 12, and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what “most important tradeoff” and “second most important tradeoff” are meant to be. These claims are also indefinite in their definition. Examiner will examine the claims as if it is up to the user, of the claimed invention, to decide which tradeoffs are the “most” and “second most” important.

4. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear in the specification or claims what “risk-return”,

“Risk-risk”, and “return-return” metrics mean. Examiner will review the claim as if any metric dealing with risk or return is acceptable.

5. Claim 11 recites the limitation “first subset of performance metrics.” There is insufficient antecedent basis for this limitation in the claim. Claim 9 only recites a subset and a second subset. Examiner will review the claim as if the “subset” is the “first subset.”

6. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 18 states, “The portfolio configuration metrics of a portfolio is calculated in an absolute term with relation to the existing portfolio.” It is not clear what an ‘absolute’ term constitutes, nor is it described in the specification. It will be assumed that absolute constitutes a configuration metric calculated against a known steady value.

7. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 19 states, “The portfolio configuration metrics of a portfolio is calculated in a relative term with relation to the existing portfolio.” It is not clear what a ‘relative’ term constitutes, nor is it described in the specification. It will be assumed that relative constitutes a configuration metric calculated against an unstable value.

Claim Rejections- 35 U.S.C. 102(b)

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 2, 4-35 are rejected under 35 U.S.C. 102(b) as being anticipated by US-Patent 5,884,287 to Edesess (Hereinafter "Edesess".)

Regarding Claim 1 and 26.

A method for multi-objective portfolio optimization for use in investment decisions based on competing objectives and a plurality of constraints constituting a portfolio problem, the method sequentially comprising:

generating a non-dominated solution set in a space; (See Edesess Col 1 lines 41-47)

applying a first set of user-specified constraints to reduce the solutions in the non- dominated solution set to a solution subset; (Col 4 lines 45-60)

executing a series of local tradeoffs on the solution subset to result in a resulting solution subset, the local tradeoffs being performed in a lower dimension performance space as compared to the space, and the solution subset being used in investment decisioning. (Col 4-5 lines 61-22)

Examiner notes all of these claims are described on a system in Edesess.

Regarding Claim 2 and 27.

The method of claim 1, wherein the non-dominated solution set is an efficient frontier. (See Edesess Col 1 lines 41-47)

Regarding Claim 4.

The method of claim 2, wherein the efficient frontier is generated using optimization processing. (Col 1 Lines 28-41)

Regarding Claim 5 and 28.

The method of claim 1, wherein the first set of user-specified constraints is defined by limits on performance metrics. (Col 4 lines 45-60)

Regarding Claim 6 and 29.

The method of claim 5, wherein the performance metrics include risk and return. (Col 4 lines 45-60)

Regarding Claim 7.

The method of claim 5, wherein the first set of user-specified independent constraints include imposing a lower limit on return and an upper limit on risk. (Col 4 lines 45-60) Examiner notes by setting an upper limit on risk the system of Edesess automatically sets a lower limit on return.

Regarding Claim 8.

The method of claim 5, wherein the first set of user-specified independent constraints include imposing a first range on return and a second range on risk. (Col 4 lines 45-60) 30.

Regarding Claim 9 and 30.

The method of claim 1, wherein the executing a series of local tradeoffs on the solution subset to result in a resulting solution subset includes:

identifying a most important tradeoff and applying that most important tradeoff to

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the solution subset, the most important tradeoff being between a subset of performance metrics; (Col 4-5 lines 61-22) Examiner notes the trade offs are in annual investments, lower future wealth goal and horizon date. Any of which can be most important.

identifying a second most important tradeoff and applying that second most important tradeoff to the solution subset, the second most important tradeoff being between a second subset of performance metrics. (Col 4-5 lines 61-22) Examiner notes the trade offs are in annual investments, lower future wealth goal and horizon date. Any of which can be the second most important.

Regarding Claim 10.

The method of claim 9, wherein the (1) identifying a most important tradeoff and applying that most important tradeoff to the solution subset, and (2) identifying a second most important tradeoff and applying that second most important tradeoff to the solution subset, constitutes a local tradeoff process, the method further including:

determining, by a user, if any further trade-offs are desired; (Col 4-5 lines 61-22) Examiner notes user sets if trade-offs are necessary to reach their requirements in Edesess.

continuing the local trade-off process until no further trade-offs are desired. (Col 4-5 lines 61-22)

Regarding Claim 11.

The method of claim 9, wherein the first subset of performance metrics is selected from the group of risk-return, risk-risk, and return-return metrics. (Col 4-5 lines

61-22)

Regarding Claim 12.

The method of claim 1, wherein the executing a series of local tradeoffs on the solution subset to result in a resulting solution subset includes:

identifying a most important tradeoff and applying that most important tradeoff to the solution subset, the most important tradeoff being between a first metric and a second metric; (Col 4-5 lines 61-22)

identifying a second most important tradeoff and applying that second most important tradeoff to the solution subset, the second most important tradeoff being between a third metric and a fourth metric. (Col 4-5 lines 61-22)

Regarding Claim 13.

The method of claim 1, wherein the method further includes applying, on the resulting solution subset, additional constraints by imposing preferences. (Col 4-5 lines 61-22)

Regarding Claim 14.

The method of claim 13, wherein the preferences are represented by relative weights on performance metrics. (Col 6 Lines 49-65)

Regarding Claim 15.

The method of claim 13, wherein the preferences are represented by relative weights on performance configuration metrics. (Col 6 Lines 49-65)

Regarding Claim 16 and 31.

The method of claim 1, wherein the executing the series of local tradeoffs is performed in performance configuration space. (Col 4-5 lines 61-22)

Regarding Claim 17.

The method of claim 16, wherein after executing the series of local tradeoffs in performance configuration space on the solution subset to result in the resulting solution subset, the method further includes:

applying portfolio configuration metrics based on the asset allocation in a portfolio; (See Col 5-6 Lines 59-28, Fig 5)

comparing portfolio configuration metrics between portfolios. (Col 6 Lines 49-65)

Examiner notes that as the user runs through various formulations the results are shown on a screen allowing for comparison.

Regarding Claim 18.

The method of claim 17, wherein the portfolio configuration metrics of a portfolio is calculated in an absolute term with relation to the existing portfolio. (See Col 5-6 Lines 59-28, Fig 5)

Regarding Claim 19.

The method of claim 17, wherein the portfolio configuration metrics of a portfolio is calculated in a relative term with relation to the existing portfolio. (See Col 5-6 Lines 59-28, Fig 5)

Regarding Claim 20.

The method of claim 17, wherein the comparing includes determining the required transaction to transform the asset allocation of an asset class in the currently

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existing portfolio to an asset allocation of the asset class in each of the portfolios in the resulting solution subset.

Regarding Claim 21.

The method of claim 1, wherein the user-specified constraints are one of independent and dependent constraints. (Col 4 lines 45-60)

Regarding Claim 22.

The method of claim 1, further including using a visualization tool. (Fig 4)

Regarding Claim 23.

The method of claim 1, wherein the first set of user-specified constraints to reduce the solutions in the non-dominated solution set to a solution subset are based on performance metrics. (Col 4 lines 45-60)

Regarding Claim 24 and 32.

The method of claim 23, the method, after executing a series of local tradeoffs on the solution subset to result in a resulting solution subset, further including: applying further user specified constraints. (Col 4-5 lines 61-22) Examiner notes further tradeoffs are possible using Edesses as stated in the given lines.

Regarding Claim 25 and 33.

The method of claim 24, wherein the further user specified constraints are based on portfolio configuration metrics. (Col 4-5 lines 61-22) Examiner notes that structure and configuration metrics have the same meaning.

Regarding Claim 34.

A computer readable medium for multi-objective portfolio optimization for use in investment decisions based on competing objectives and a plurality of constraints constituting a portfolio problem, the computer readable medium comprising:

a first portion that generates a non-dominated solution set; (See Edesess Col 1 lines 41-47)

a second portion that applies a first set of user-specified constraints to reduce the solutions in the non-dominated solution set to a solution subset; (Col 4 lines 45-60)

a third portion that executes a series of local tradeoffs on the solution subset to result in a resulting solution subset; and (Col 4-5 lines 61-22)

a fourth portion, and after executing the series of local tradeoffs in performance metric space on the solution subset to result in the resulting solution subset, the fourth portion applies further user specified constraints, the resulting solution subset being used in investment decisioning. (Col 4-5 lines 61-22)

Regarding Claim 35.

A method for multi-objective portfolio optimization for use in investment decisions based on competing objectives and a plurality of constraints constituting a portfolio problem, the method sequentially comprising:

generating a non-dominated solution set in a space; (See Edesess Col 1 lines 41-47)

applying a first set of user-specified constraints to reduce the solutions in the non-dominated solution set to a solution subset; (Col 4 lines 45-60)

executing a series of local tradeoffs on the solution subset to result in a resulting

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solution subset, the local tradeoffs being performed in a lower dimension performance space as compared to the space, and the solution subset being used in investment decisioning; (Col 4-5 lines 61-22)

wherein the executing the series of local tradeoffs is performed in performance configuration space; (Col 4-5 lines 61-22)

wherein after executing the series of local tradeoffs in performance configuration space on the solution subset to result in the resulting solution subset, the method further includes:

applying portfolio configuration metrics based on the asset allocation in a portfolio; (See Col 5-6 Lines 59-28, Fig 5)

comparing portfolio configuration metrics between portfolios. (Col 6 Lines 49-65)

Claim Rejections- 35 U.S.C. 103(a)

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Edesess further in view of "Genetic Algorithms and Genetic Programming in Computational Finance" by Shu-Heng Chen (Hereinafter "Chen").

<http://books.google.com/books?id=U7MuQQS->

[XNsC&printsec=copyright&dq=genetic+algorithm+to+form+efficient+frontier#PPR19,M1](http://books.google.com/books?id=U7MuQQS-XNsC&printsec=copyright&dq=genetic+algorithm+to+form+efficient+frontier#PPR19,M1)

Regarding Claim 3.

Edesess fails to teach the efficient frontier is generated using an evolutionary algorithm. However, Chen does. (See Chen page 223-224 section 1)

It is obvious to combine Edesess and Chen. There is motivation to do so because by using the evolutionary algorithm to formulate an efficient frontier provides arguably a more precise front than any other method. This allows for a better portfolio selection resulting in the potential for more money to be made by the user.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES A. VEZERIS whose telephone number is (571)270-1580. The examiner can normally be reached on Monday-alt. Fridays 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Kramer can be reached on 571-272-6783. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James A. Kramer/
Supervisory Patent Examiner, Art Unit 3693

/JAMES A VEZERIS/
Examiner, Art Unit 3693

January 22, 2008